cylinder. A piston [Piston] return [means are] device is provided which [tend] tends to force the piston from a position outside of the cylinder to a position having a portion of the piston inside the cylinder, so that the piston oscillates, moving into and out of the cylinder, driven by air supplied through the air supply passage. One or more electric coils are placed to enclose changing magnetic flux caused by the magnetic moment associated with the oscillating piston whereby an emf is generated in the coil(s) so that an external circuit connected to the coil(s) to complete a circuit through the coil(s) may receive electric power from the coil(s).

REMARKS

In his action, the examiner stated, in regard to the specification:

"APPLICANT IS REMINDED OF THE PROPER LANGUAGE AND FORMAT FOR AN ABSTRACT OF THE DISCLOSURE.

THE ABSTRACT SHOULD BE IN NARRATIVE FORM AND GENERALLY LIMITED TO A SINGLE PARAGRAPH ON A SEPARATE SHEET WITHIN THE RANGE OF 50 TO 250 WORDS. IT IS IMPORTANT THAT THE ABSTRACT NOT EXCEED 250 WORDS IN LENGTH SINCE THE SPACE PROVIDED FOR THE ABSTRACT ON THE COMPUTER TAPE USED BY THE PRINTER IS LIMITED. THE FORM AND LEGAL PHRASEOLOGY OFTEN USED IN PATENT CLAIMS, SUCH AS 'MEANS' AND 'SAID,' SHOULD BE AVOIDED. THE ABSTRACT SHOULD DESCRIBE THE DISCLOSURE SUFFICIENTLY TO ASSIST READERS IN DECIDING WHETHER THERE IS A NEED FOR CONSULTING THE FULL PATENT TEXT FOR DETAILS.

THE LANGUAGE SHOULD BE CLEAR AND CONCISE AND SHOULD NOT REPEAT INFORMATION GIVEN IN THE TITLE. IT SHOULD AVOID USING PHRASES WHICH CAN BE IMPLIED, SUCH AS, 'THE DISCLOSURE CONCERNS,' 'THE DISCLOSURE DEFINED BY THIS INVENTION,' 'THE DISCLOSURE DESCRIBES,' ETC."

In the amendment made supra, the Abstract was amended to have the proper language and format. The examiner is respectfully requested to enter the amendment to the Abstract.

In regard to claim rejections under 35 U.S.C. 103(a), the examiner rejected claims 1-2, 5-7 11-12 and 14-21 as being unpatentable over Li (US 5,945,749) in view of Oudet (US 5,559,378) and further in view of Carrol (US 5,350,222).

The examiner stated that some elements of the present invention are present in his primary reference, Li. In this regard he stated:

"LI DISCLOSES A PNEUMATICALLY DRIVEN ELECTRIC POWER GENERATOR (FIGURE 1) COMPRISING: A CYLINDER (9); A PISTON (1) DISPOSED WITHIN SAID CYLINDER;

MEANS (4, 6) ENGAGING SAID PISTON FOR BIASING SAID PISTON FROM A SECOND POSITION TOWARD A FIRST POSITION WHEREBY SAID PISTON OSCILLATES, MOVING BACK AND FORTH BETWEEN SAID FIRST POSITION AND SAID SECOND POSITION, DRIVEN BY AIR SUPPLIED THROUGH AN AIR SUPPLY PASSAGE (13) TO SAID CYLINDER; AND

AT LEAST ONE ELECTRIC COIL (7) PLACED TO ENCLOSE CHANGING MAGNETIC FLUX CAUSED BY SAID MAGNETIC MOMENT ASSOCIATED WITH SAID PISTON WHEREBY AND EMF IS GENERATED IN SAID ELECTRIC COIL, SO THAT AN EXTERNAL CIRCUIT CONNECTED TO SAID ELECTRIC COIL RECEIVES ELECTRIC POWER FROM SAID ELECTRIC COIL;

SAID MEANS ENGAGING SAID PISTON FOR BIASING SAID PISTON FROM SAID SECOND POSITION TOWARD SAID FIRST POSITION IS A COMPRESSION SPRING (4, 6) DISPOSED BETWEEN A PISTON EXTENSION (14) AND AN END CLOSURE (11);

A CYLINDER EXTENSION (11) AT LEAST ONE OF FORMED INTEGRALLY WITH AND ATTACHED TO SAID CYLINDER, SAID CYLINDER EXTENSION HAVING AN INNER SURFACE HAVING A TRANSVERSE DIMENSION GREATER THAN A TRANSVERSE DIMENSION OF SAID CYLINDER, SAID CYLINDER EXTENSION HAVING AN END CLOSURE; AND

AN EXHAUST PASSAGE (13) CONNECTED TO AT LEAST ONE OF SAID CYLINDER EXTENSION AND SAID END CLOSURE;

A PISTON EXTENSION AT LEAST ONE OF FORMED INTEGRALLY WITH AND ATTACHED TO SAID PISTON, AT LEAST A PORTION OF SAID PISTON EXTENSION CONTACTING AT LEAST A PORTION OF SAID CYLINDER EXTENSION TO PROVIDE POSITIONAL CONSTRAINT TO SAID PISTON;

SAID PORTION OF SAID PISTON EXTENSION CONTACTING AT LEAST A PORTION OF SAID CYLINDER EXTENSION IS AN OUTER SURFACE OF SAID PISTON EXTENSION AND SAID PORTION OF SAID CYLINDER EXTENSION IS AN INNER SURFACE OF SAID CYLINDER EXTENSION;

SAID MAGNETIC MOMENT ASSOCIATED WITH SAID PISTON IS PROVIDED BY A MAGNET ATTACHED TO AT LEAST ONE OF SAID PISTON AND SAID PISTON EXTENSION;

SAID MAGNETIC MOMENT ASSOCIATED WITH SAID PISTON IS PROVIDED BY FORMING AT LEAST ONE OF SAID PISTON AND SAID PISTON EXTENSION OF A MATERIAL HAVING A MAGNETIC MOMENT."

In the preceding statement, the examiner appears to be reading the present invention into Li. However, agent for the applicant notes that Figure 1 of Li is <u>not</u> capable of generating electrical power from a pneumatic source unless the pressure of the pneumatic source is oscillating. Li in column 2, lines 19-23 states: "Such second chamber is sealed by the second diaphragm, wherein fluid

pressure in the second chamber is being exhausted when said the first chamber is being pressurized and fluid pressure in the first chamber is being exhausted when the second chamber is being pressurized." Li provides for this need by the piston type control valve shown in Figures 2 and 3. Li's system for using air pressure to generate electrical power requires two components, the control valve of Figures 2 and 3 as well as the generator of Figure 1.

In his rejection, the examiner acknowledged that Li does not have certain aspects of the instant invention. His action included the statement:

"... HOWEVER, LI DOES NOT DISCLOSE A CYLINDER HAVING A FIRST END CONNECTABLE THROUGH AN INLET FLOW PATH TO AN AIR SUPPLY PASSAGE CONTAINING AIR AT A POSITIVE PRESSURE, A SECOND END OF SAID CYLINDER BEING OPEN; NOR THAT

SAID PISTON IS ALSO POSITIONABLE IN A SECOND LOCATION WHEREIN SAID FIRST PORTION OF SAID PISTON IS OUTSIDE OF SAID CYLINDER SO THAT CLEARANCE IS PROVIDED BETWEEN SAID PISTON AND SAID CYLINDER SO THAT AIR MAY EXHAUST FROM SAID CYLINDER; NOR

A FIRST CYLINDER HAVING A FIRST END CONNECTABLE THROUGH A FIRST INLET FLOW PATH TO AN AIR SUPPLY PASSAGE, A SECOND END OF SAID FIRST CYLINDER BEING OPEN;

SECOND CYLINDER HAVING A FIRST END CONNECTABLE THROUGH A SECOND INLET FLOW PATH TO SAID AIR SUPPLY PASSAGE, A SECOND END OF SAID SECOND CYLINDER BEING OPEN;

A PISTON HAVING A MAGNETIC MOMENT ASSOCIATED THEREWITH, SAID PISTON HAVING A FIRST END PORTION AND A SECOND END PORTION, SAID PISTON BEING POSITIONABLE IN A FIRST LOCATION WHEREIN SAID FIRST END PORTION OF SAID PISTON IS DISPOSED WITHIN SAID FIRST CYLINDER AND SAID SECOND END PORTION OF SAID PISTON IS DISPOSED OUTSIDE OF SAID SECOND CYLINDER, SAID PISTON FURTHER BEING POSITIONABLE IN A

SECOND LOCATION WHEREIN SAID SECOND END PORTION OF SAID PISTON IS DISPOSED WITHIN SAID SECOND CYLINDER AND SAID FIRST PORTION OF SAID PISTON IS OUTSIDE OF SAID FIRST CYLINDER;

SO THAT WHEN SAID PISTON IS DISPOSED IN SAID FIRST POSITION, AIR PRESSURE RECEIVED IN SAID FIRST CYLINDER THROUGH SAID FIRST INLET FLOW PATH DRIVES SAID PISTON TOWARD SAID SECOND POSITION, WHEREUPON SAID FIRST CYLINDER EXHAUSTS, AND WHEN SAID PISTON IS DISPOSED IN SAID SECOND POSITION, AIR PRESSURE RECEIVED IN SAID SECOND CYLINDER THROUGH SAID SECOND INLET FLOW PATH DRIVES SAID PISTON TOWARD SAID FIRST POSITION, WHEREUPON SAID SECOND CYLINDER EXHAUSTS, SO THAT SAID PISTON OSCILLATES; NOR

SEALING MEANS DISPOSED ON AT LEAST ONE OF AN OUTER SURFACE OF SAID FIRST PORTION OF SAID PISTON AND AN INNER SURFACE OF SAID CYLINDER TO PREVENT LOSS OF AIR BETWEEN SAID PISTON AND SAID CYLINDER AND PERMIT AIR PRESSURE IN SAID CYLINDER TO INCREASE WHEN SAID FIRST PORTION OF SAID PISTON IS DISPOSED WITHIN SAID CYLINDER; NOR THAT SAID SEALING MEANS IS AN O-RING IN A GROOVE FORMED ON SAID OUTER SURFACE OF SAID FIRST PORTION OF SAID PISTON; NOR THAT SAID INLET FLOW PATH INCLUDES AN ELECTRICALLY ACTUATED SHUTOFF VALVE TO PREVENT AIR FLOW THROUGH SAID GENERATOR, THEREBY TURNING OFF SAID GENERATOR; NOR THAT SAID AT LEAST ONE ELECTRIC COIL IS CONNECTED TO A RECTIFIER TO SUPPLY DC ELECTRIC POWER; NOR THAT SAID RECTIFIER IS A FULL BRIDGE RECTIFIER TO SUPPLY DC ELECTRIC POWER WHENEVER A NET FLUX THROUGH SAID AT LEAST ONE ELECTRIC COIL IS CHANGING."

The preceding elements which the examiner acknowledges are not present in Li constitute the very heart of the present invention. Claim 1 of the present invention cites a generator having a cylinder connected through an air supply passage to an air supply, the second end of the cylinder being open. A piston is disposed in the cylinder, and sealing means are provided between the cylinder

and the piston. The piston is blown out of the open end of the cylinder, whereupon the cylinder exhausts. A biasing means then returns the piston to the cylinder and the cycle continues.

None of these features are in any way anticipated nor suggested by Li.

The examiner relies on Oudet and Carroll to supply the deficiencies in Li. In a previous amendment, agent for the applicant noted that Oudet was non analogous art, inasmuch as Oudet is an electromagnetic valve. In response to these arguments, the examiner stated, in his action of August 29, 2000:

"APPLICANT'S ARGUMENTS FILED ON JUNE 13 2000 HAVE BEEN FULLY CONSIDERED BUT THEY ARE NOT PERSUASIVE.

IN RESPONSE TO APPLICANT'S ARGUMENT THAT OUDET ET AL. (U.S. PAT. NO. 5,559,378) IS NONANALOGOUS ART, IT HAS BEEN HELD THAT A PRIOR ART REFERENCE MUST EITHER BE IN THE FIELD OF APPLICANT'S ENDEAVOR OR, IF NOT, THEN BE REASONABLY PERTINENT TO THE PARTICULAR PROBLEM WITH WHICH THE APPLICANT WAS CONCERNED, IN ORDER TO BE RELIED UPON AS A BASIS FOR REJECTION OF CLAIMED INVENTION. SEE IN RE OETIKER, 977 F.2D 1443, 24 USPQ2D 1443 (FED. CIR. 1992). IN THIS CASE, THE OUDET PATENT IS IN THE FIELD OF THE APPLICANT'S ENDEAVOR BECAUSE THE APPLICANT'S CLAIMED INVENTION IS DIRECTED TO A DIRECT EXCHANGE OF ENERGY BETWEEN PNEUMATIC PROCESSES AND ELECTRICAL PROCESSES. IN THIS CASE THE APPLICANT'S CLAIMED INVENTION IS DIRECTED TO A DYNAMOELECTRIC MACHINE BEING CONTROLLED BY THE FLOW OF A GAS. BOTH THE PATENTS OF OUDET AND LI (U.S. PAT. NO. 5,945,749) ARE DIRECTED TO A DIRECT EXCHANGE OF ENERGY BETWEEN PNEUMATIC PROCESSES AND ELECTRICAL PROCESSES; LI SHOWS THE USE OF PNEUMATIC FORCES TO ACTUATE THE ELECTRIC GENERATOR WHILE OUDET SHOWS THE USE OF

ELECTRIC POWER TO CONTROL THE PNEUMATIC FLOW AND FORCE IN THE SYSTEM. IT IS WIDELY KNOWN IN THE DYNAMOELECTRIC MACHINE ART THAT THE STRUCTURE OF A DYNAMOELECTRIC MACHINE CAN BE ALTERNATELY USED AS AN ELECTRIC GENERATOR OR AS AN ELECTRIC MOTOR. THE APPLICANT IS CLAIMING AN ALTERNATE USE OF PATENT OF OUDET.

OUDET DOES CONVEY ELECTRIC ENERGY INTO PNEUMATIC ENERGY, SINCE IF THE PISTON IN FIGURE 5 IS NOT MOVED BY THE ELECTRIC ENERGY, THEN THERE WILL NOT BE A PNEUMATIC OUTPUT IN THE PRESSURE OUTLET (81 OR 83, COLUMN 8, LINES 48-50).

Agent for the applicant disagrees with the examiner's reasoning. Oudet is not a device for turning electrical energy into pneumatic energy. It is not an air compressor. The invention of Oudet, Figure 5, is a valve, not a compressor. In column 6, lines 40-42, Oudet states: "THE APPLICATOR DESCRIBED WITH REFERENCE TO FIG 5 IS SUITABLE FOR APPLICATIONS INVOLVING THE PRODUCTION OF LINEAR PNEUMATIC DISTRIBUTING DEVICES." Likewise, in column 8, lines 48-53 he states: "THE MOBILE DEVICE 50 MAKES IT POSSIBLE TO CONNECT THE PRESSURE INLET 80 WITH THE PRESSURE OUTLET 81, WHEN THE MOBILE DEVICE 50 IS IN THE LOWERED POSITION. WHEN THE MOBILE DEVICE 50 IS IN THE RAISED POSITION, THE ACTUATOR MAKES IT POSSIBLE TO CONNECT THE PRESSURE INLET 82 WITH THE PRESSURE OUTLET 83." Nowhere in his patent does Oudet state that his invention compresses air or supplies compressed air. Hence, Oudet is not a device for turning electrical energy into pneumatic energy.

The inclusion of Carrol is also not relevant to the present invention, except that Carrol provides O-ring seals between piston 70 and inner surface 65. There is no motivation or teaching in Carrol which would anticipate or suggest the aspect, crucial in the present invention, of a piston portion sealed against a

cylinder and moved out of the cylinder by air pressure, whereupon the air pressure drops and the piston moves back into the cylinder to repeat the cycle.

Agent for the applicant believes that neither Li, Oudet or Carrol individually nor together teach or suggest Claim 1 or claim 20 of the present application. Accordingly, the examiner is respectfully requested to withdraw his rejections of claims 1 and 20 under 35 U.S.C. § 103(a).

Inasmuch as claims 2-19 depend from claim 1, and claim 21 depends from claim 20, it is believed that these claims are likewise patentable. The examiner is therefore respectfully requested to withdraw his rejection of claims 2-19 and 21 under 35 U.S.C. § 103(a).

It is believed therefore that the application is now in condition for allowance. An early notice of allowance is respectfully requested.

In the event the examiner has further difficulties with the allowance of the application, he is invited to contact the undersigned agent for the applicants by telephone at (412)380-0725, to resolve any remaining questions or issues by interview and/or Examiner's Amendment as to may matter that will expedite the completion of the prosecution of the application.

Respectfully submitted,
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